PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2021- 22 Examination

Semester: 8   Date: 30/03/2022
Subject Code: 203113451   Time: 10:30am to 01:00pm
Subject Name: Robotics & Industrial Automation   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 **Objective Type Questions** - (Fill in the blanks, one word answer, MCQ-not more than Five in case of   **(15)**
MCQ) (All are compulsory) (Each of one mark)
1. The main function of a robot is
    a) Sensing the environment by external sensors
    b) Decision making based on the information received from the sensor
    c) Performing the task decided
    d) All of the mentioned
2. Pitch motion enables
    a) Rotation of wrist
    b) Rightward or leftward swiveling movement of the wrist
    c) Up and Down movement of the wrist and involves rotational movement as well
    d) None of the Mentioned
3. Which of the following are contact robotic sensors?
    a) Proximity Sensor
    b) Electro Optical Sensors
    c) Range Imaging Sensors
    d) None of the Mentioned
4. Tools are fastened directly to the robot wrist and become the end effectors.
    a) True
    b) False
5. Optical Encoders are internal State Sensors
    a) True
    b) False
6. Suction or Vaccum cups are used for_____ Objects
7. A _____ Delivers high pressure fluid
8. The most common type of electrical actuator is _____
9. The End-effector is also called as _____
10. Who created "Sophia", the humanoid robot?
11. What are the applications of Industrial robots?
12. Define the term Degree of Freedom?
13. What is Robotic End-Effector?
14. What is Inverse Kinematics of Robot?
15. Define Calibration and Accuracy

Q.2 Answer the following questions. (Attempt any three)   **(15)**
A) Explain about SCARA Robot?
B) Enlist Gripper Design Considerations
C) What do you mean by touching sensing & Tactile Sensing. Name some important Tactile Sensors
D) What are the features and applications of Hydraulic applications

Q.3 A) Give the Comparison of robots on the basis of coordinate systems   **(07)**
B) Explain briefly various drive methods used for robot gripper systems   **(08)**
                                OR
B) Discuss briefly various kinds of sensors used in robotics   **(08)**

Q.4 A) Explain briefly Motion Planning   **(07)**
                                OR
A) Compare the robot drive systems   **(07)**
B) Explain the concept of D-H Notation   **(08)**